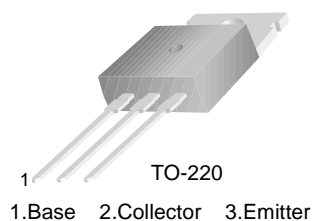




TIP140T/141T/142T

Monolithic Construction With Built In Base-Emitter Shunt Resistors

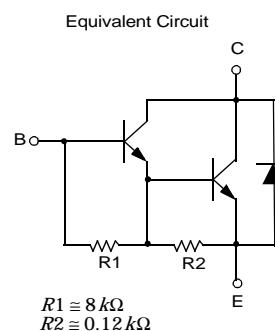
- High DC Current Gain : $h_{FE} = 1000$ @ $V_{CE} = 4V$, $I_C = 5A$ (Min.)
- Industrial Use
- Complement to TIP145T/146T/147T



NPN Epitaxial Silicon Darlington Transistor

Absolute Maximum Ratings $T_C = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : TIP140T	60	V
	: TIP141T	80	V
	: TIP142T	100	V
V_{CEO}	Collector-Emitter Voltage : TIP140T	60	V
	: TIP141T	80	V
	: TIP142T	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	10	A
I_{CP}	Collector Current (Pulse)	15	A
I_B	Base Current (DC)	0.5	A
P_C	Collector Dissipation ($T_C = 25^\circ C$)	80	W
T_J	Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ C$



Electrical Characteristics $T_C = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage : TIP140T : TIP141T : TIP142T	$I_C = 30\text{mA}$, $I_B = 0$	60			V
			80			V
			100			V
I_{CEO}	Collector Cut-off Current : TIP140T : TIP141T : TIP142T	$V_{CE} = 30V$, $I_B = 0$ $V_{CE} = 40V$, $I_B = 0$ $V_{CE} = 50V$, $I_B = 0$			2	mA
					2	mA
					2	mA
I_{CBO}	Collector Cut-off Current : TIP140T : TIP141T : TIP142T	$V_{CB} = 60V$, $I_E = 0$ $V_{CB} = 80V$, $I_E = 0$ $V_{CB} = 100V$, $I_E = 0$			1	mA
					1	mA
					1	mA
I_{EBO}	Emitter Cut-off Current	$V_{BE} = 5V$, $I_C = 0$			2	mA
h_{FE}	DC Current Gain	$V_{CE} = 4V$, $I_C = 5A$	1000			mA
		$V_{CE} = 4V$, $I_C = 10A$	500			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 5A$, $I_B = 10\text{mA}$			2	V
		$I_C = 10A$, $I_B = 40\text{mA}$			3	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10A$, $I_B = 40\text{mA}$			3.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 4V$, $I_C = 10A$			3	V
t_D	Delay Time	$V_{CC} = 30V$, $I_C = 5A$ $I_{B1} = 20\text{mA}$ $I_{B2} = -20\text{mA}$ $R_L = 6\Omega$		0.15		μs
t_R	Rise Time			0.55		μs
t_{STG}	Storage Time			2.5		μs
t_F	Fall Time			2.5		μs

Typical Characteristics

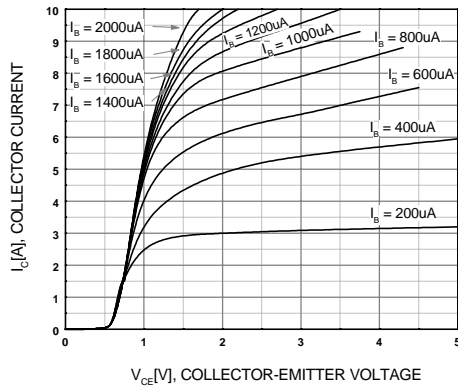


Figure 1. Static Characteristic

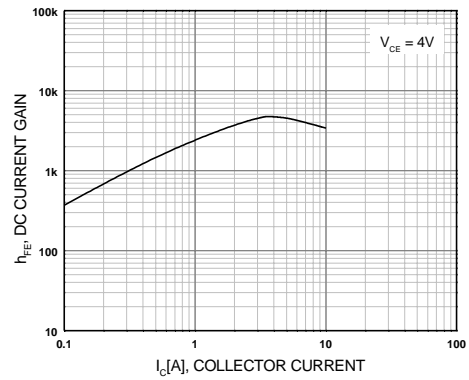


Figure 2. DC current Gain

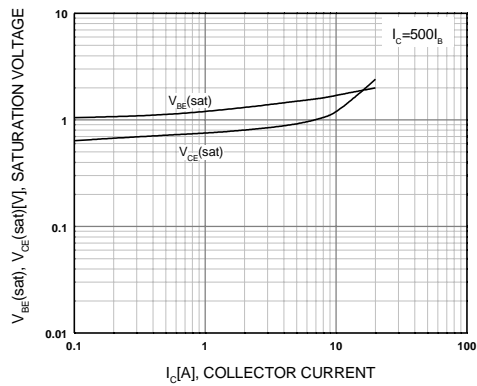


Figure 3. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

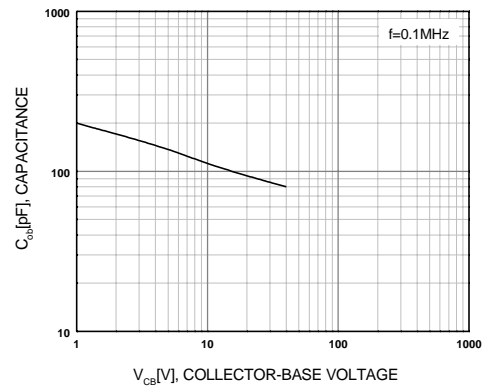


Figure 4. Collector Output Capacitance

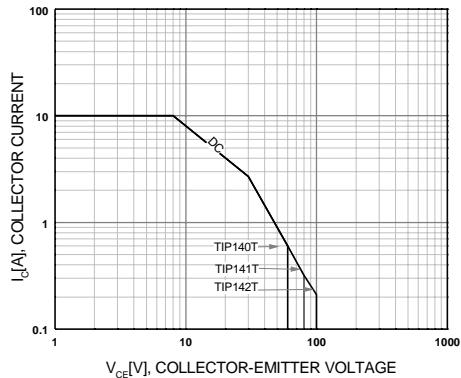


Figure 5. Safe Operating Area

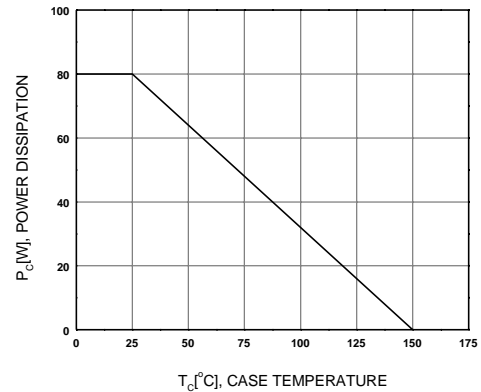


Figure 6. Power Derating

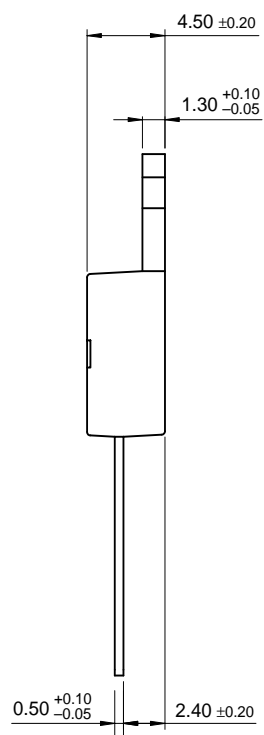
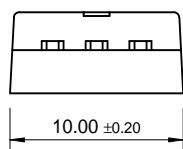
Technical drawing of a 2.54TYP connector. The drawing shows a side view of the component with various dimensions in millimeters (mm) and inches (in). The overall width is 9.90 ±0.20 mm (0.39 in). The overall height is 18.95 MAX. mm (0.746 in). The drawing includes a central circular feature with a diameter of 3.60 ±0.10 mm (0.1417 in). The drawing also shows a 45° chamfer on the bottom right corner. The drawing is labeled with dimensions in millimeters and inches, and the text "2.54TYP" is repeated twice at the bottom.

Dimensions (mm) and (inches):

- Overall Width: 9.90 ±0.20 (0.39)
- Overall Height: 18.95 MAX. (0.746)
- Top Flange Width: 8.70 (0.343)
- Top Flange Thickness: 1.30 ±0.10 (0.051)
- Top Flange Height: 2.80 ±0.10 (0.110)
- Central Circular Feature Diameter: 3.60 ±0.10 (0.1417)
- Central Circular Feature Position: 3.00 (0.118)
- Central Circular Feature Height: 3.70 (0.146)
- Bottom Flange Width: 1.27 ±0.10 (0.050)
- Bottom Flange Height: 1.08 ±0.30 (0.043)
- Bottom Flange Thickness: 1.52 ±0.10 (0.060)
- Bottom Flange Chamfer: 45°
- Bottom Flange Position: 0.80 ±0.10 (0.031)
- Bottom Flange Height: 13.08 ±0.20 (0.515)
- Bottom Flange Width: 1.00 (0.039)
- Bottom Flange Thickness: 1.27 ±0.10 (0.050)
- Bottom Flange Position: 1.52 ±0.10 (0.060)
- Bottom Flange Chamfer: 45°
- Bottom Flange Height: 10.08 ±0.30 (0.397)
- Bottom Flange Width: 0.80 ±0.10 (0.031)

2.54TYP
[2.54 ±0.20]

2.54TYP
[2.54 ±0.20]



Rev. B1, December 2002

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